



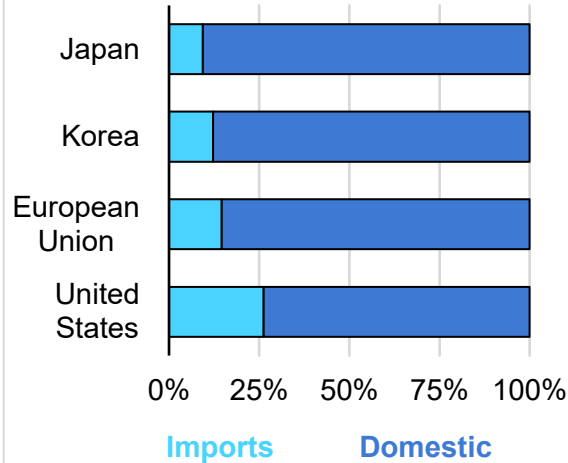
What Next for the Global Car Industry?

Dr Leonardo Paoli, Clean energy technology analyst

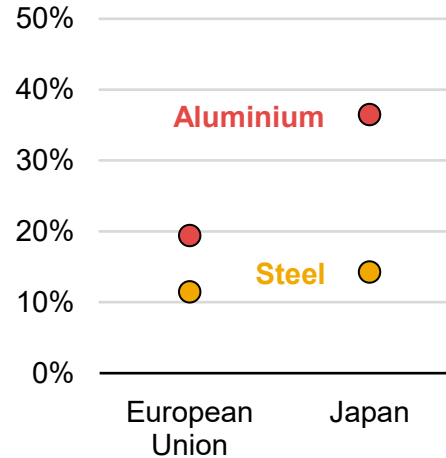
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The car industry is a central pillar of many economies

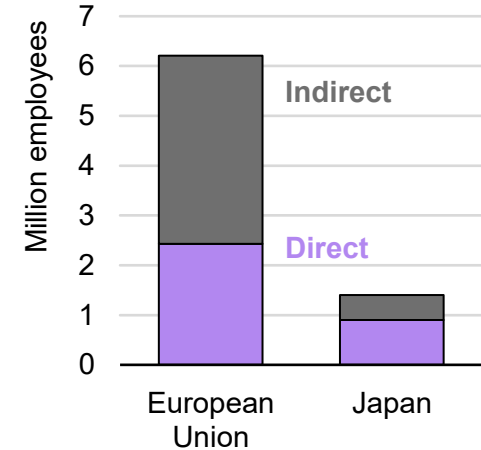
Component sourcing



Car manufacturing share of domestic material demand



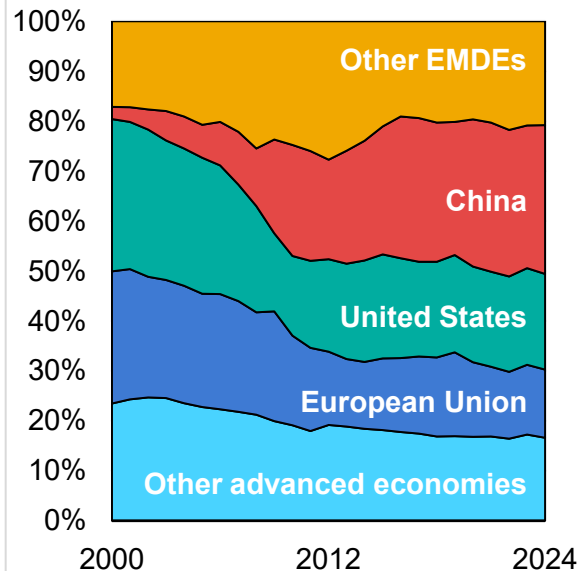
Automotive industry employment



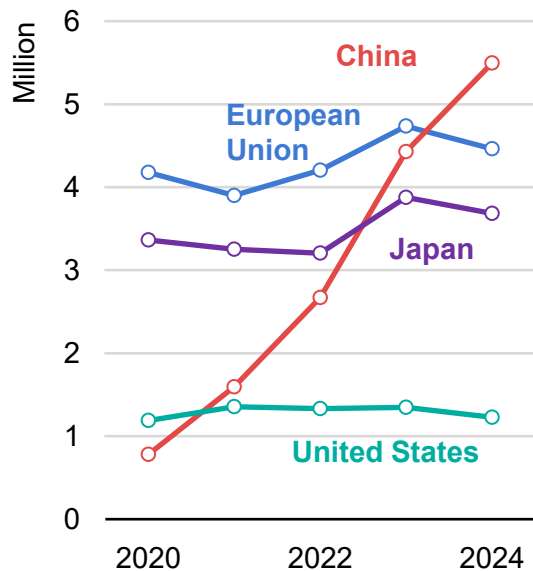
The direct and indirect economic effects of car manufacturing account for 2-6% of GDP in traditional car-producing countries. The industry is structured around industrial clusters where different industries co-locate.

Three shifts are reshaping global car markets

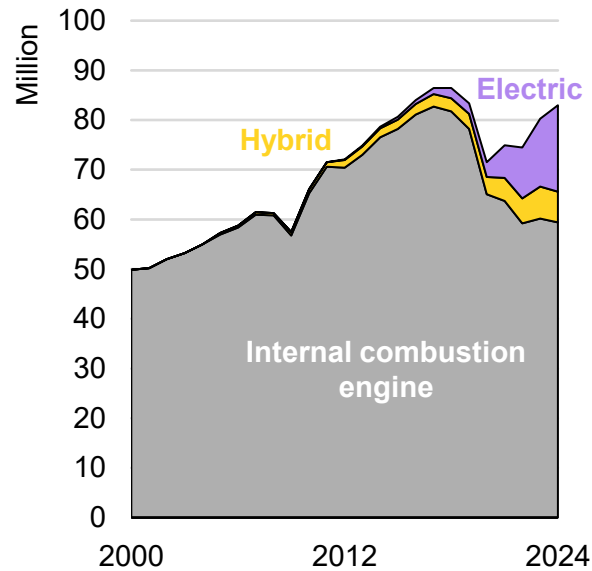
Car sales by region



Car exports



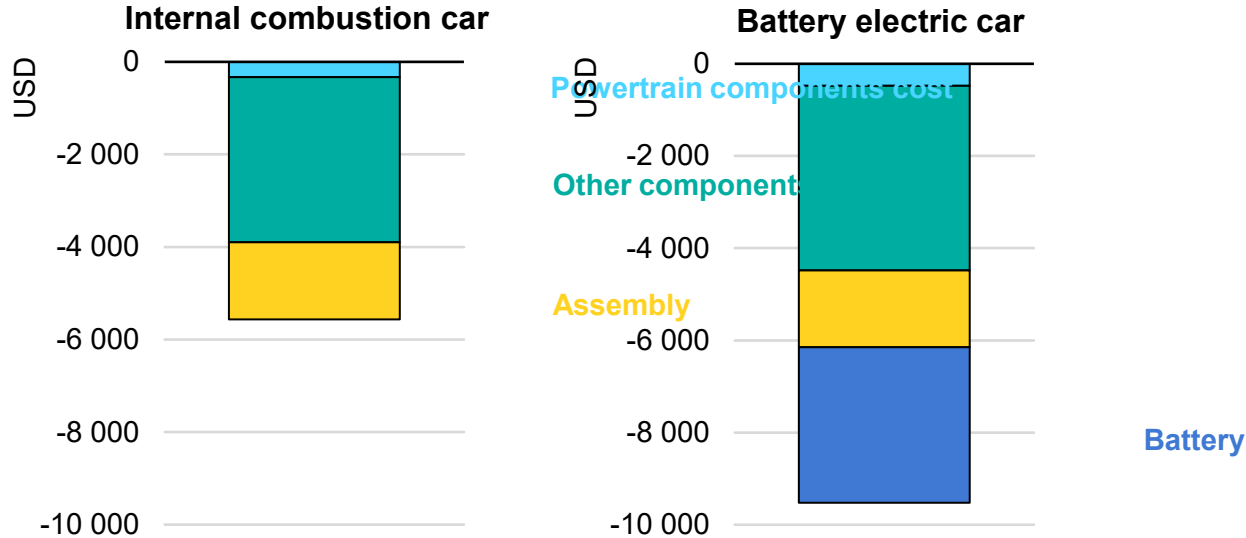
Car sales by technology



Car production in China has more than doubled since 2010. Car exports from China grew 25% last year, resulting in China overtaking the European Union as the largest car exporter in the world.

China's car industry has a significant cost advantage

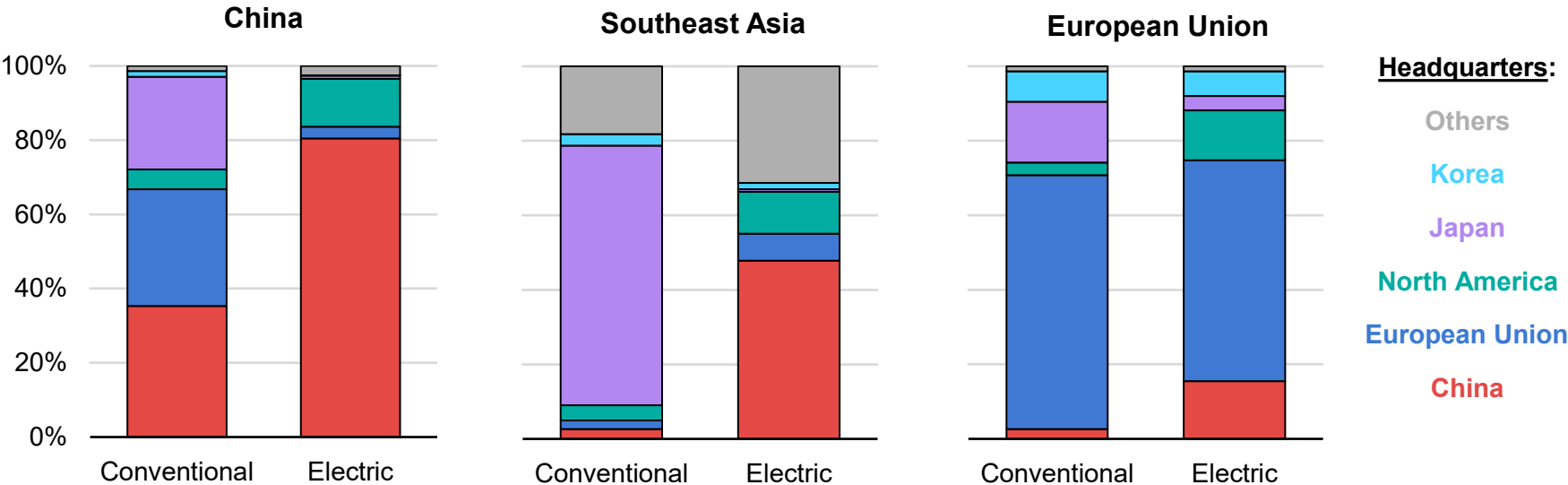
Difference in direct manufacturing costs for a typical car between China and Germany



The production of electric cars by Chinese carmakers is around 30% cheaper than that of traditional carmakers, and they have better technical specifications. The cost advantage extends to conventional cars as well.

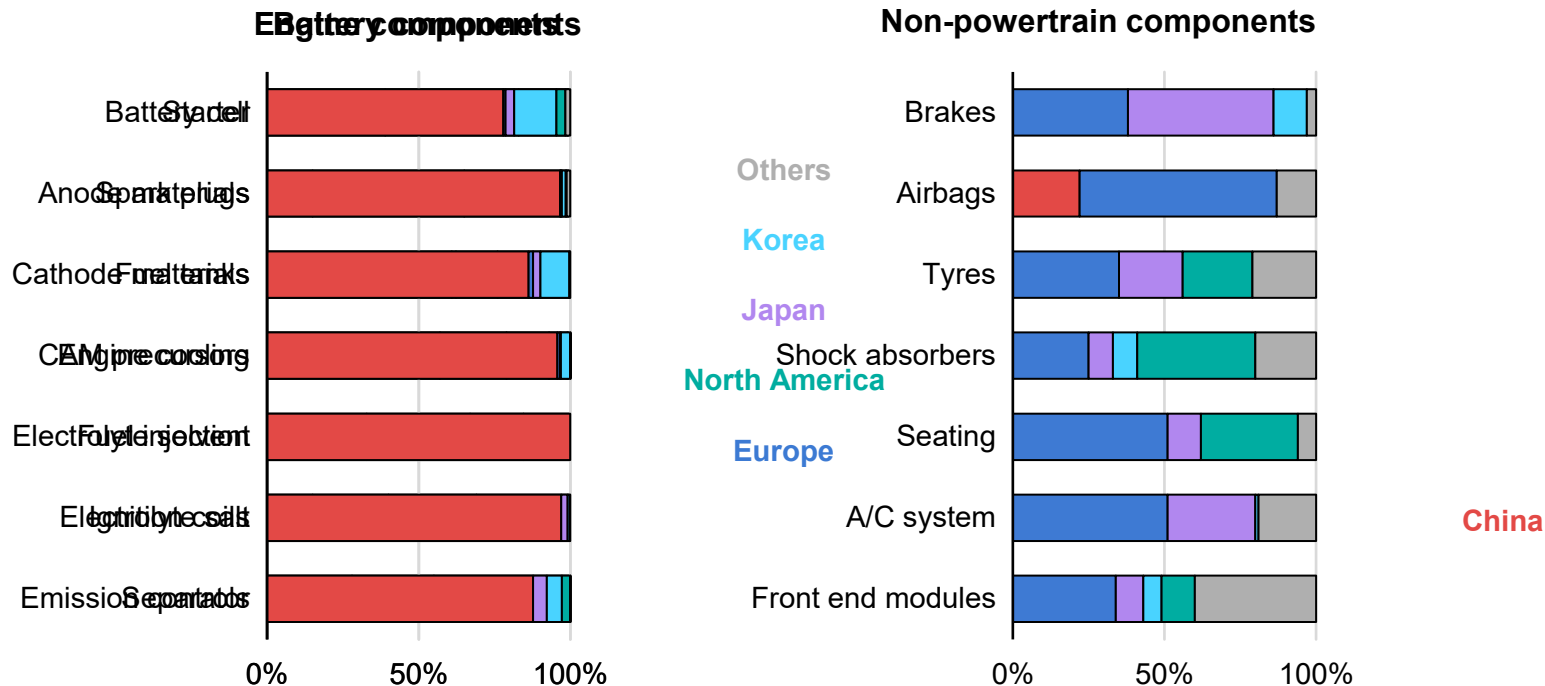
Chinese electric cars are competitive domestically and abroad

Carmaker market share by manufacturer headquarters and region, 2024



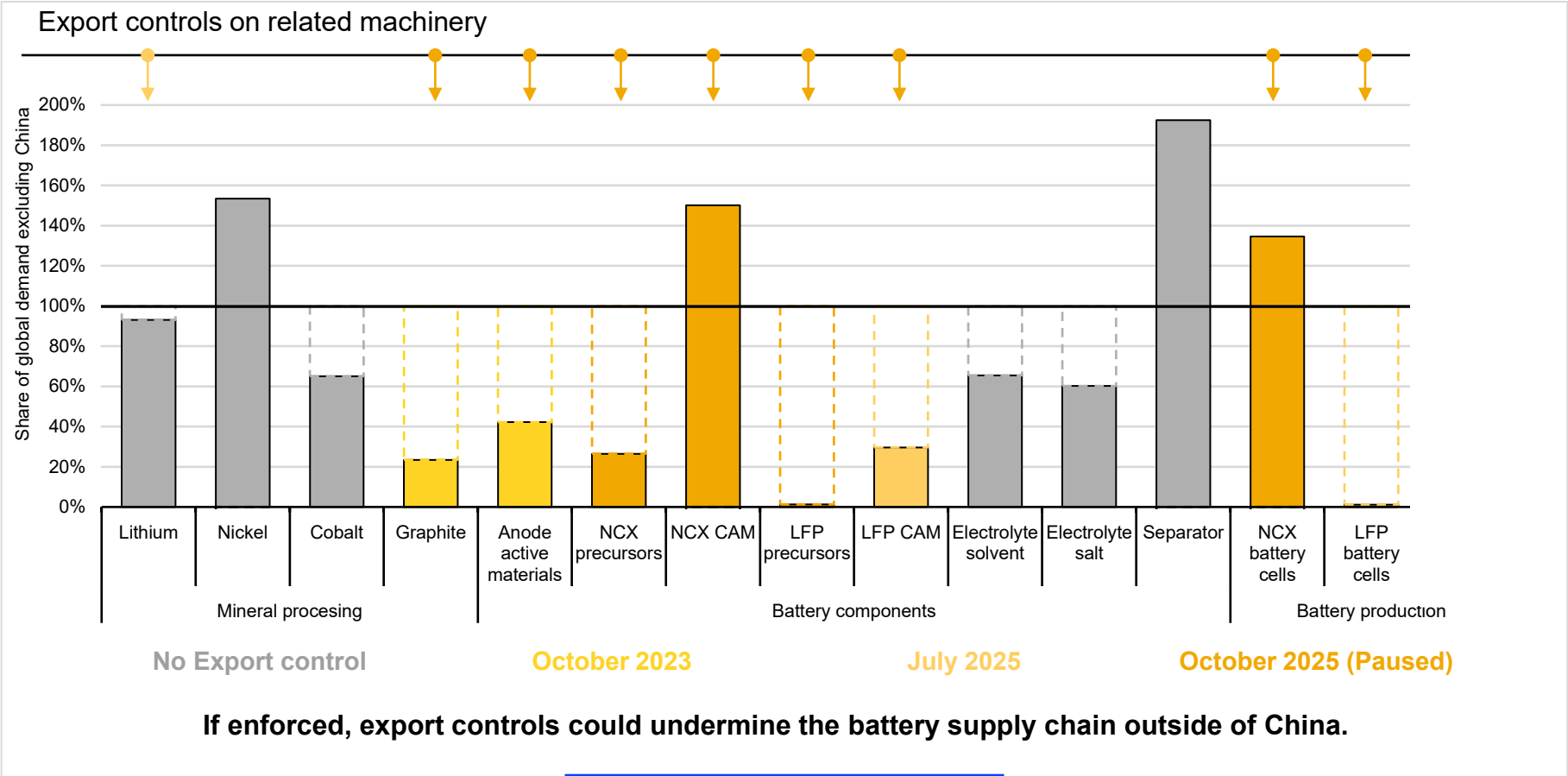
China's industry is significantly more present in international EV markets than in conventional car markets. International carmakers selling in China are typically part of joint ventures with Chinese manufacturers.

The car industry ecosystem is a strength of non-Chinese companies

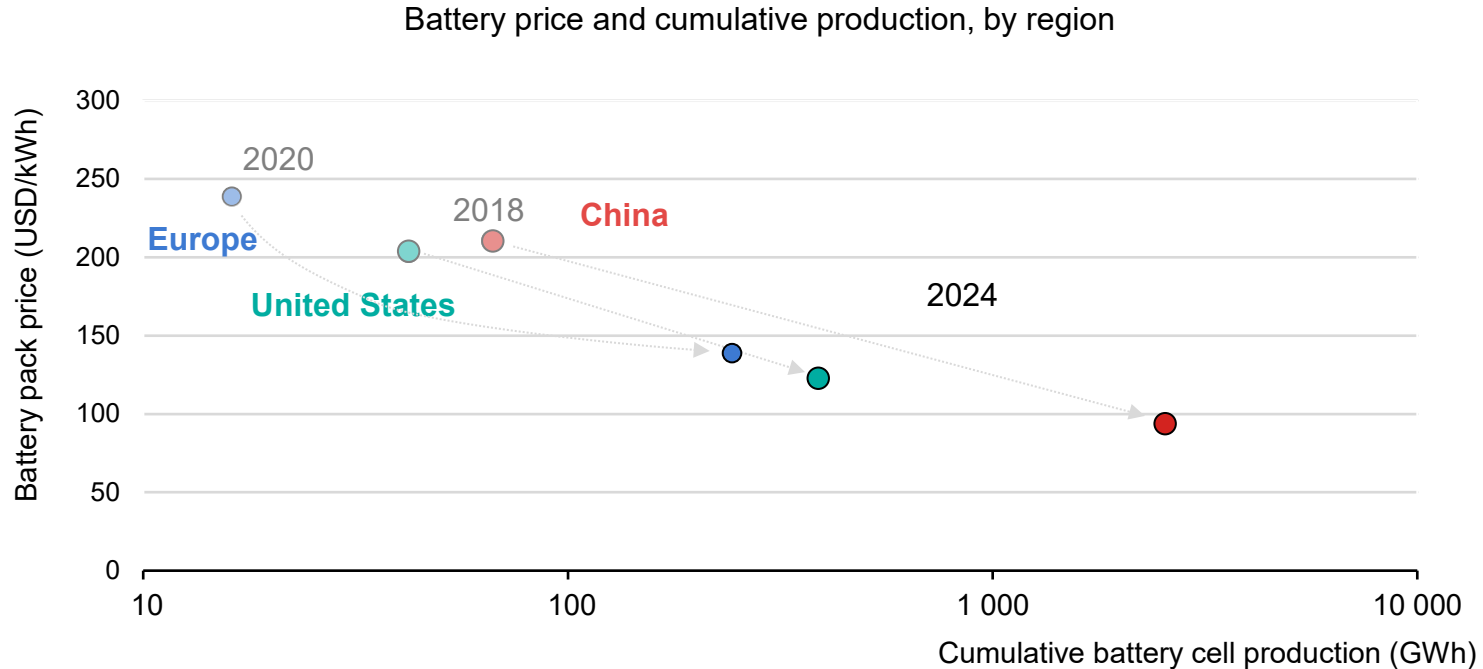


Manufacturing conventional car components is dominated by companies outside China, while battery supply chains are concentrated in China. Conventional cars have five times more moving parts than electric cars.

Chinese export controls target weak links in the battery supply chain

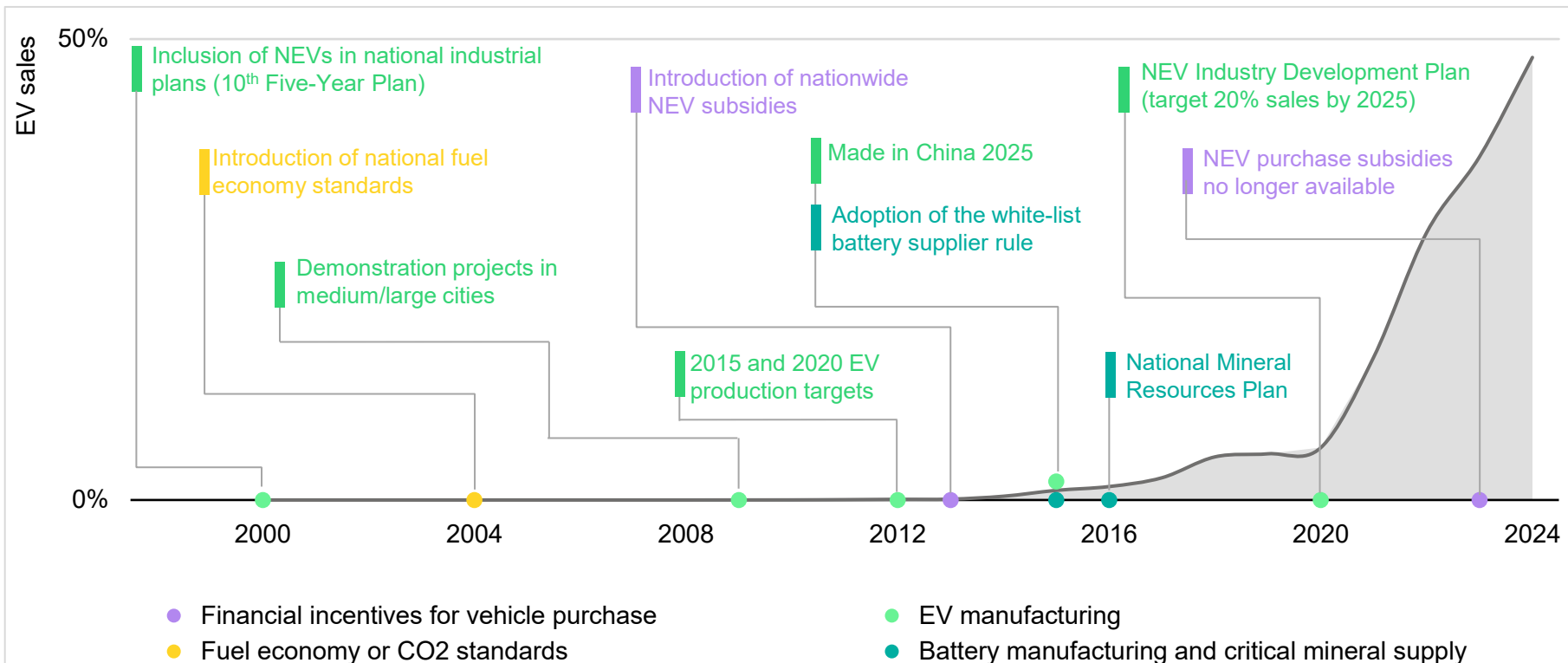


Industrial choices have bolstered China's progress



A focus on innovation and advanced manufacturing processes led China to command a decisive lead in battery production: in the Shanghai region alone there is more battery manufacturing capacity than in the whole of Europe

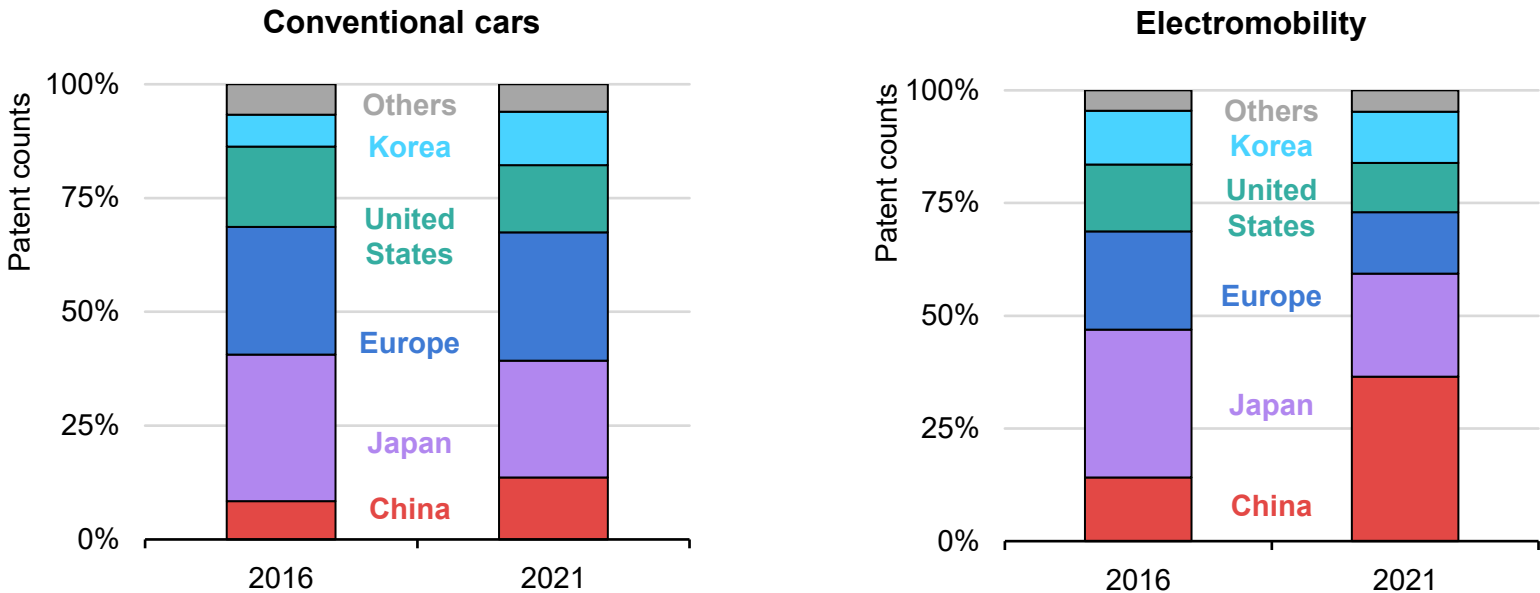
Supply policies have consistently underpinned EV growth in China



Since 2001 China has pursued a comprehensive EV strategy; setting ambitious production and deployment targets while leveraging electric vehicles as a key driver of national industrial development over the years.

Innovation has been a key driver of Chinese EV competitiveness

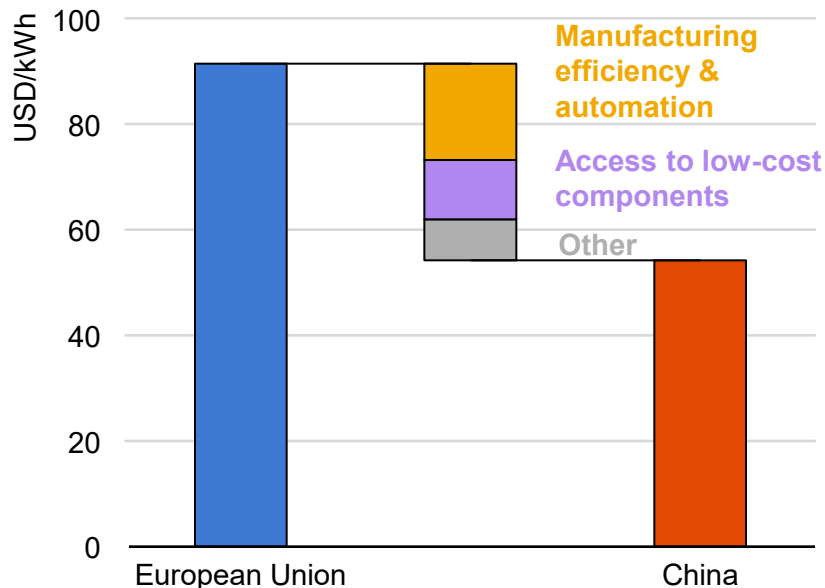
Patenting activity by region and technology



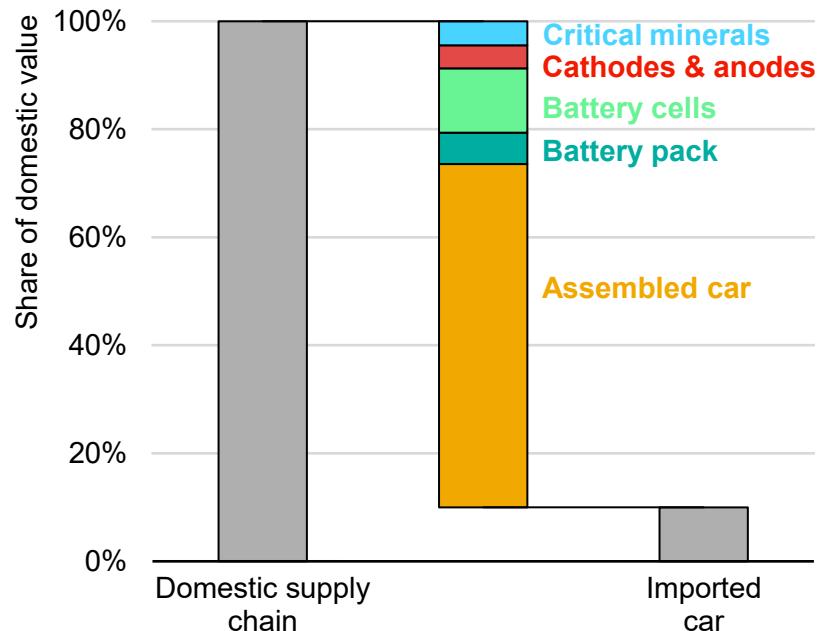
Conventional car patenting is still dominated by traditional carmakers, but China now files twice as many EV patents as Europe and the United States combined.

There are strategies to bridge the competitiveness gap

Domestic lithium-ion battery production cost by region



Value creation from battery electric car production



Most of the battery cost gap with China can be closed. Prioritising EV production now can boost domestic value and battery demand, while supply chains are strengthened over time, both locally and with strategic partners.



Opportunities to improve electric car manufacturing competitiveness

Reach economies of scale and learn by doing for electric cars

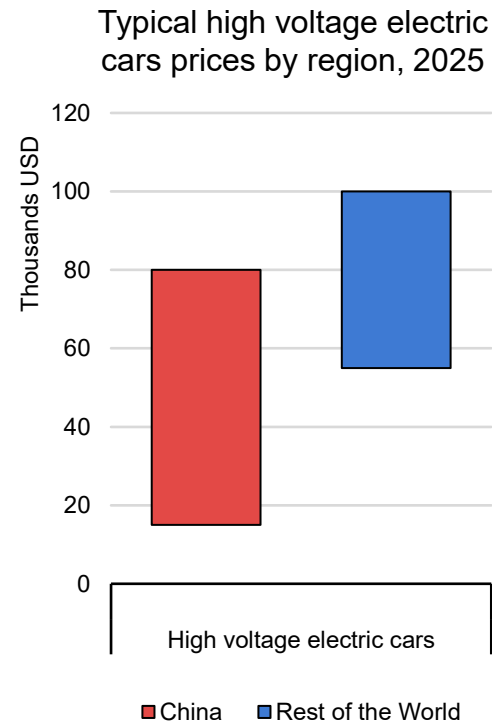
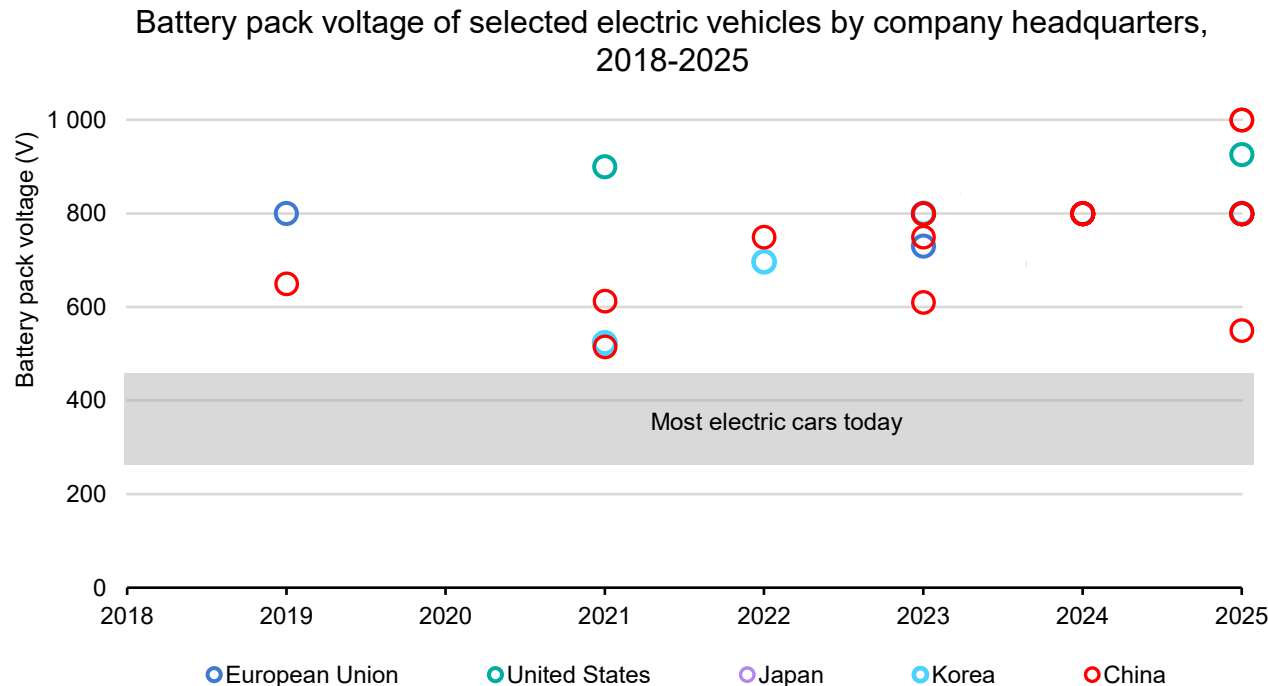
Scale up battery manufacturing and related skills

Adopt the most competitive battery chemistries

Secure dependable supply chains for critical minerals

Manage energy costs

The race for high voltage electric cars is accelerating



Automakers are rapidly shifting to higher-voltage battery packs for faster charging. First deployed by Porsche, this technology is now far more widespread among Chinese manufacturers – and typically at lower prices.